



Application No. 10/646,560
After Final Office Action on August 16, 2006

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AMENDMENTS TO THE CLAIMS

1. (Currently amended) An active pixel sensor, comprising:

a plurality of pixels, wherein each of said pixels comprises:

a reset portion for resetting a photosensitive element of said pixel;

a first storage circuit for storing a reset voltage level of said photosensitive element, wherein said first storage circuit further comprises a first sample and hold circuit, wherein said first sample and hold circuit comprises a first sample and hold transistor switchably coupling a first terminal of a first storage capacitor with said reset portion; and

a second storage circuit for storing a voltage level of said photosensitive element after an integration period, wherein said second storage circuit comprises a second sample and hold circuit, wherein said second sample and hold circuit comprises a second sample and hold transistor switchably coupling a first terminal of a second storage capacitor with said reset portion.

2. (Original) The active pixel sensor of claim 1, wherein said photosensitive element is a photodiode.

3. (Previously Presented) The active pixel sensor of claim 1, wherein each of said pixels further comprises:

a column bus coupled to said first storage circuit and said second storage circuit for receiving said reset voltage level and said voltage level of said photosensitive element after integration.

Claims 4-5 (Canceled).

6. (Original) The active pixel sensor of claim 5, wherein said first terminal of said first storage capacitor is coupled to a gate of a first source follower transistor, a first source/drain terminal of said first source follower transistor is coupled to a supply voltage terminal, and a second source/drain terminal of said first source follower transistor is switchably coupled to said column bus.

Claims 7-8 (Canceled).

9. (Original) The active pixel sensor of claim 7, wherein said first terminal of said second storage capacitor is coupled to a gate of a second source follower transistor, a first source/drain terminal of said second source follower transistor is coupled to a supply voltage terminal, and a second source/drain terminal of said second source follower transistor is switchably coupled to said column bus.

Claims 10-16 (Canceled).

17. (Currently amended) A semiconductor chip, comprising:

an active pixel sensor, said active pixel sensor comprising:

a plurality of pixels, wherein each of said pixels comprises:

a reset portion for resetting a photosensitive element of said pixel;

a first storage circuit for storing a reset voltage level of said photosensitive element, wherein said first storage circuit further comprises a first sample and hold circuit, wherein said first sample and hold circuit comprises a first sample and hold transistor switchably coupling a first terminal of a first storage capacitor with said reset portion; and

a second storage circuit for storing a voltage level of said photosensitive element after an integration period, wherein said second storage circuit comprises a second sample and hold circuit, wherein said second sample and hold circuit comprises a second sample and hold transistor switchably coupling a first terminal of a second storage capacitor with said reset portion.

18. (Original) The semiconductor chip of claim 17, wherein said photosensitive element is a photodiode.

19. (Previously Presented) The semiconductor chip of claim 17, wherein each of said pixels further comprises:

a column bus coupled to said first storage circuit and said second storage circuit for receiving said reset voltage level and said voltage level of said photosensitive element after integration.

Claims 20-21 (Canceled).

22. (Original) The semiconductor chip of claim 21, wherein said first terminal of said first storage capacitor is coupled to a gate of a first source follower transistor, a first source/drain terminal of said first source follower transistor is coupled to a supply voltage terminal, and a second source/drain terminal of said first source follower transistor is switchably coupled to said column bus.

Claims 23-24 (Canceled).

25. (Original) The semiconductor chip of claim 24, wherein said first terminal of said second storage capacitor is coupled to a gate of a second source follower transistor, a first source/drain terminal of said second source follower transistor is

coupled to a supply voltage terminal, and a second source/drain terminal of said second source follower transistor is switchably coupled to said column bus.

Claims 26-32 (Canceled).

33. (Previously Presented) A processor system, comprising:

a processor; and

an imager device coupled to said processor for sending signals to said processor, said imager device comprising:

a plurality of pixels, wherein each of said pixels comprises:

a reset portion for resetting a photosensitive element of said pixel;

a first storage circuit for storing a reset voltage level of said photosensitive element, wherein said first storage circuit further comprises a first sample and hold circuit, wherein said first sample and hold circuit comprises a first sample and hold transistor switchably coupling a first terminal of a first storage capacitor with said reset portion; and

a second storage circuit for storing a voltage level of said photosensitive element after an integration period, wherein said second storage circuit comprises a second sample and hold circuit, wherein said second sample and hold circuit comprises a second sample and hold transistor switchably coupling a first terminal of a second storage capacitor with said reset portion.

34. (Original) The processor system of claim 33, wherein said photosensitive element is a photodiode.

35. (Previously Presented) The processor system of claim 33, wherein each of said pixels further comprises:

a column bus coupled to said first storage circuit and said second storage circuit for receiving said reset voltage level and said voltage level of said photosensitive element after integration.

Claims 36-37 (Canceled).

38. (Original) The processor system of claim 37, wherein said first terminal of said first storage capacitor is coupled to a gate of a first source follower transistor, a first source/drain terminal of said first source follower transistor is coupled to a supply voltage terminal, and a second source/drain terminal of said first source follower transistor is switchably coupled to said column bus.

Claims 39-40 (Canceled).

41. (Original) The processor system of claim 40, wherein said first terminal of said second storage capacitor is coupled to a gate of a second source follower transistor, a first source/drain terminal of said second source follower transistor is coupled to a supply voltage terminal, and a second source/drain terminal of said second source follower transistor is switchably coupled to said column bus.

Claims 42-48 (Canceled).

49. (Currently amended) A method for operating an active pixel sensor, the method comprising:

resetting a photosensitive element of a pixel within a reset portion, wherein said pixel comprises a first storage circuit and a second storage circuit;

storing a reset voltage of said photosensitive element within said pixel first storage circuit, wherein said first storage circuit comprises a first sample and hold circuit, wherein said first sample and hold circuit comprises a first sample and hold transistor switchably coupling a first terminal of a first storage capacitor with said reset portion;

exposing said photosensitive element to a light source during an integration period while said reset voltage is stored within said pixel; and

storing within said pixel second storage circuit a voltage level of said photosensitive element after said integration period, said reset voltage still being stored within said pixel first storage circuit, wherein said second storage circuit comprises a second sample and hold circuit, wherein said second sample and hold circuit comprises a second sample and hold transistor switchably coupling a first terminal of a second storage capacitor with said reset portion.

50. (Original) The method of claim 49 further comprising:

reading out said reset voltage from said pixel;

reading out said voltage level of said photosensitive element after said integration period; and

generating a difference signal corresponding to a level of light to which said photosensitive element was exposed during said integration period.

51. (Original) The method of claim 50, wherein said act of reading out said reset voltage comprises:

reading out said reset voltage on a column bus running through at least a portion of said pixel.

52. (Original) The method of claim 50, wherein said act of reading out said voltage level comprises:

reading out said voltage level of said photosensitive element on a column bus running through at least a portion of said pixel.

Claim 53 (Canceled).